

Claims:

What is claimed is:

1. A fusing apparatus for fixing images made from a liquid toner onto a substrate using an electrophotographic process, the apparatus comprising:

a first fusing station comprising first and second prefusing rollers, the second prefusing roller being positioned to contact the first prefusing roller and create a first nip area between the first and second prefusing rollers, wherein at least one of the first and second prefusing rollers is heated to a temperature that provides a prefusing temperature within the first nip area; and

a second fusing station spaced from the first fusing station and having first and second final fusing rollers, the second final fusing roller being positioned to contact the first final fusing roller and create a second nip area between the first and second final fusing rollers, wherein at least one of the first and second final fusing rollers is heated to a temperature that provides a fusing temperature within the second nip area;

wherein the fusing temperature of the second nip area is higher than the prefusing temperature of the first nip area.

2. The fusing apparatus of claim 1, wherein at least one of the first and second prefusing rollers comprises a heat conductive core and a heat source for controlling the temperature of the heat conductive core.

3. The fusing apparatus of claim 1, wherein at least one of the first and second final fusing rollers comprises a heat conductive core and a heat source for controlling the temperature of the heat conductive core.

4. The fusing apparatus of claim 1 in combination with an electrophotographic printing device, wherein the first and second prefusing rollers of the first fusing station are positioned within the printing device to contact an image on a substrate prior to the first and second final fusing rollers of the second fusing station contacting the image on the substrate.

5. The fusing apparatus of claim 1, wherein the first nip area is aligned with the second nip area, and wherein the first and second prefusing rollers are spaced from the first and second final fusing rollers.

6. The fusing apparatus of claim 1, wherein at least one of the first and second prefusing rollers is maintained at a temperature between about 100°C and about 150°C.

7. The fusing apparatus of claim 1, wherein at least one of the first and second final fusing rollers is maintained at a temperature between about 130°C and 220°C.

8. The fusing apparatus of claim 1, wherein at least one of the first and second prefusing rollers comprises a layer with a surface energy less than a surface energy of the liquid toner.

9. The fusing apparatus of claim 8, wherein the outer layer is a silicone release coating layer.

10. The fusing apparatus of claim 1, wherein at least one of the first and second final fusing rollers comprises an outer layer with a surface energy less than a surface energy of the liquid toner.

11. The fusing apparatus of claim 10, wherein the outer layer is a fluorinated polymer release coating layer.

12. The fusing apparatus of claim 1, wherein the first and second prefusing rollers are heated to the same temperature.

13. The fusing apparatus of claim 1, wherein one of the first and second prefusing rollers is positioned to contact an image on the substrate, wherein the roller that is positioned to

contact the image is heated to a higher temperature than the roller that is not positioned to contact the image.

14. The fusing apparatus of claim 1, wherein the first and second final fusing rollers are heated to the same temperature.

15. The fusing apparatus of claim 1, wherein one of the first and second final fusing rollers is positioned to contact an image on the substrate, wherein the roller that is positioned to contact the image is heated to a higher temperature than the roller that is not positioned to contact the image.

16. The fusing apparatus of claim 1, wherein the first and second fusing stations are contained in a single fusing unit.

17. The fusing apparatus of claim 1, wherein at least one of the rollers of the first and second fusing stations is heated with a halogen lamp.

18. The fusing apparatus of claim 1, further comprising a cooling element for cooling at least one of the rollers of the first and second fusing stations.

19. The fusing apparatus of claim 18, wherein the cooling element is a fan.

20. The fusing apparatus of claim 1, wherein the prefusing temperature is selected to evaporate a predetermined portion of solvent from liquid toner on the substrate.

21. A method of fixing images made from a liquid toner onto a substrate within an electrophotographic printing device having a plurality of fusing stations, comprising the steps of:
placing a liquid toned image on at least one surface of a substrate;
moving the substrate through a first fusing station, the first fusing station comprising a first prefusing roller and a second prefusing roller positioned to contact the first prefusing roller

and create a first nip area, wherein at least one of the first and second prefusing rollers is heated to a temperature that provides a prefusing temperature within the first nip area; and

moving the substrate through a second fusing station, the second fusing station being spaced from the first fusing station and comprising a first final fusing roller and a second final fusing roller positioned to contact the first final fusing roller and create a second nip area, wherein at least one of the first and second final fusing rollers is heated to a temperature that provides a fusing temperature within the second nip area;

wherein the fusing temperature of the second nip area is higher than the prefusing temperature of the first nip area.

22. The method of claim 21, wherein the step of moving the substrate through the first fusing station further comprises evaporating a predetermined portion of a solvent from the liquid toned image.

23. The method of claim 21, wherein the step of moving the substrate through the first fusing station further comprises providing the liquid toned image on the substrate in a direction so that the image contacts a heated prefusing roller as it moves through the first nip area.

24. The method of claim 21, wherein the step of moving the substrate through the second fusing station further comprises fusing toner particles of the liquid toned image onto the substrate.